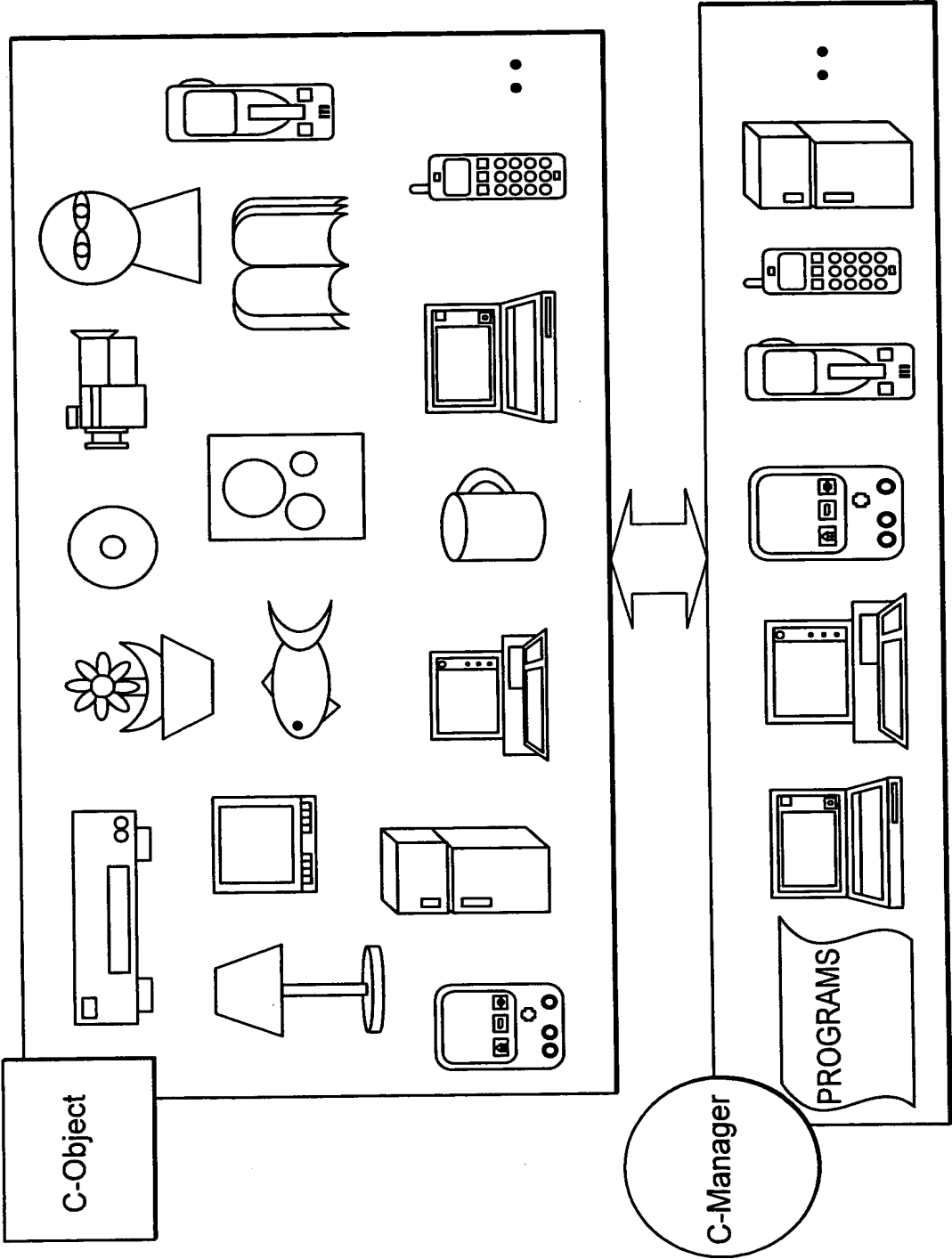
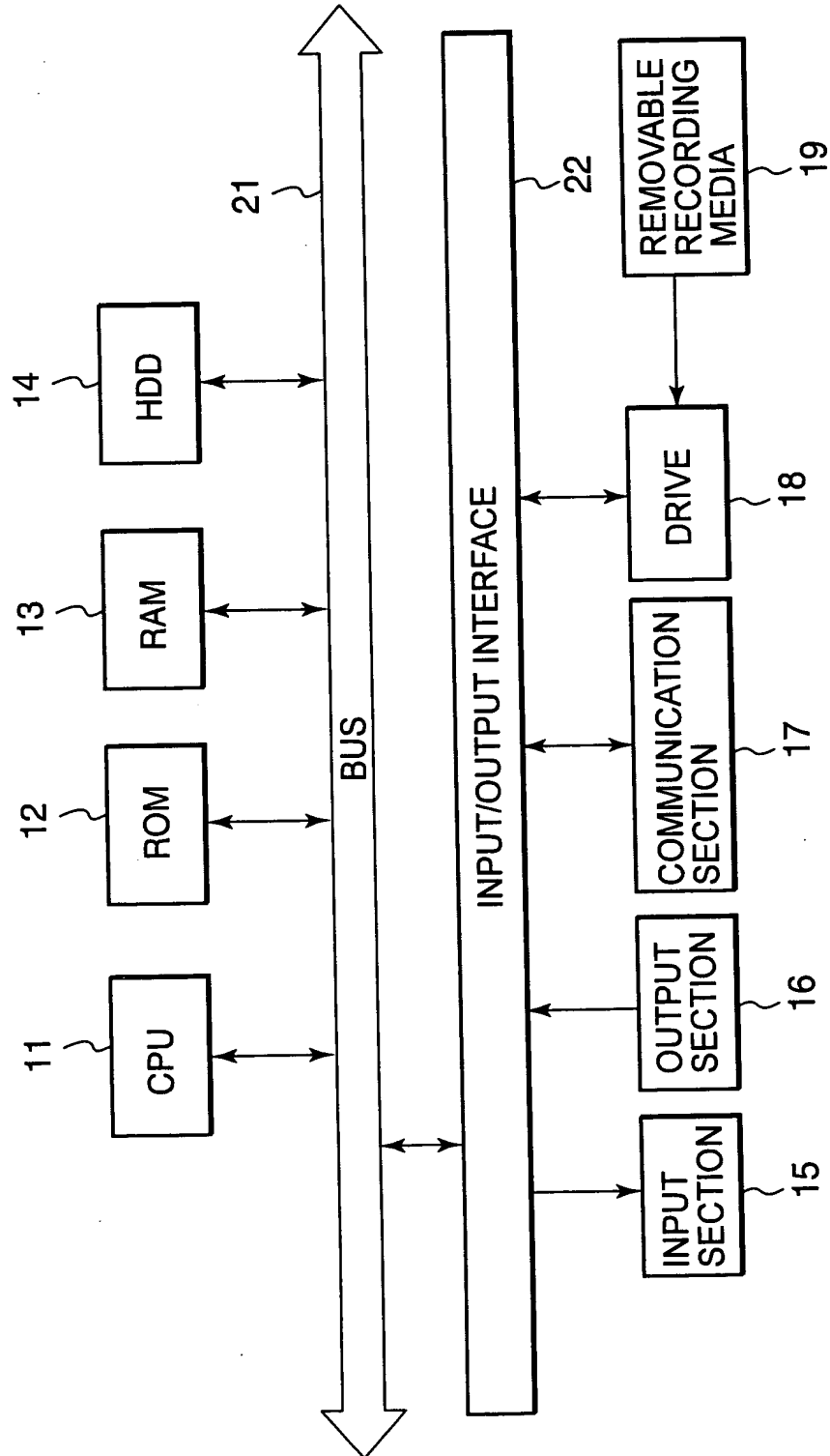


FIG. 1



2/21

FIG. 2



3/21

FIG. 3

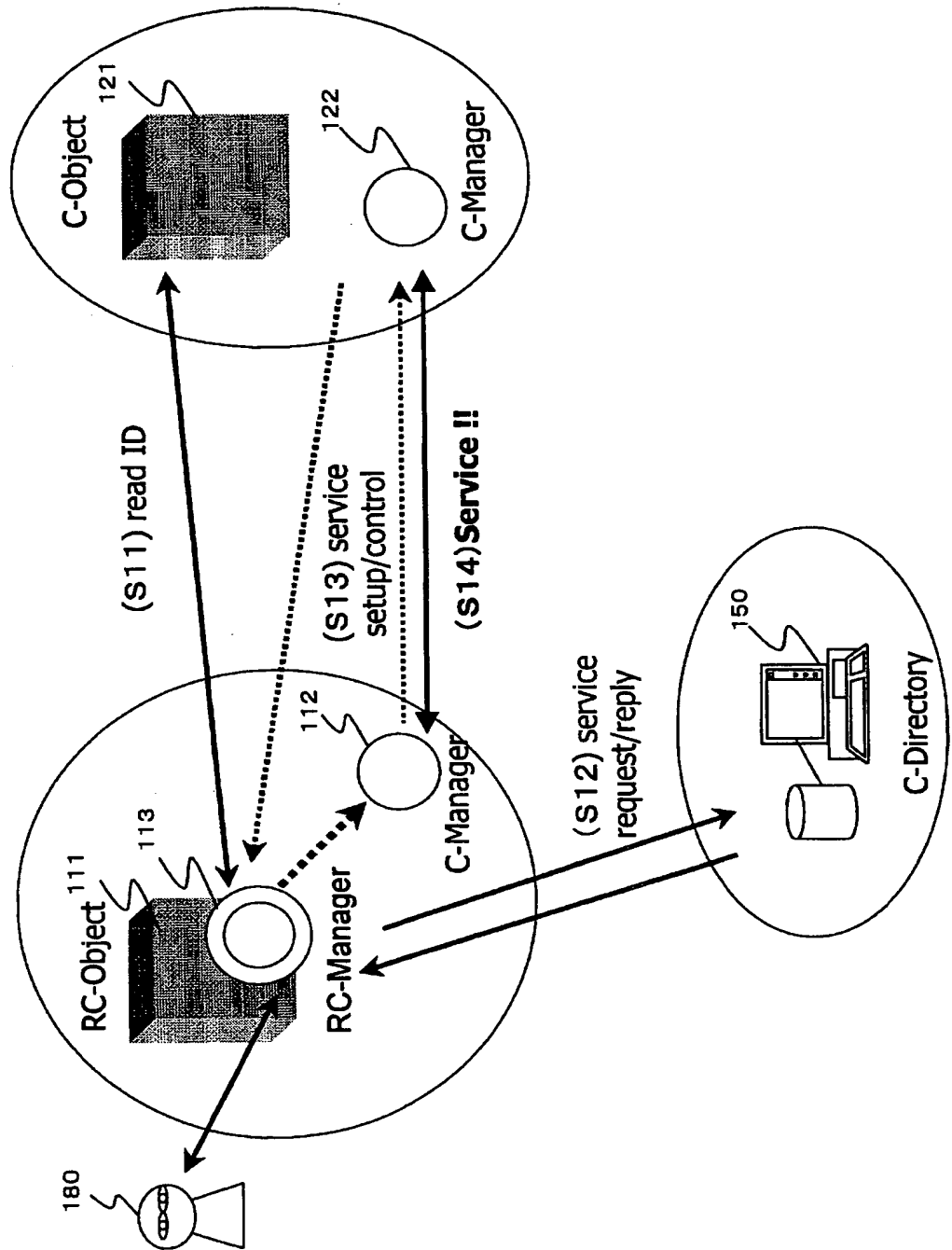
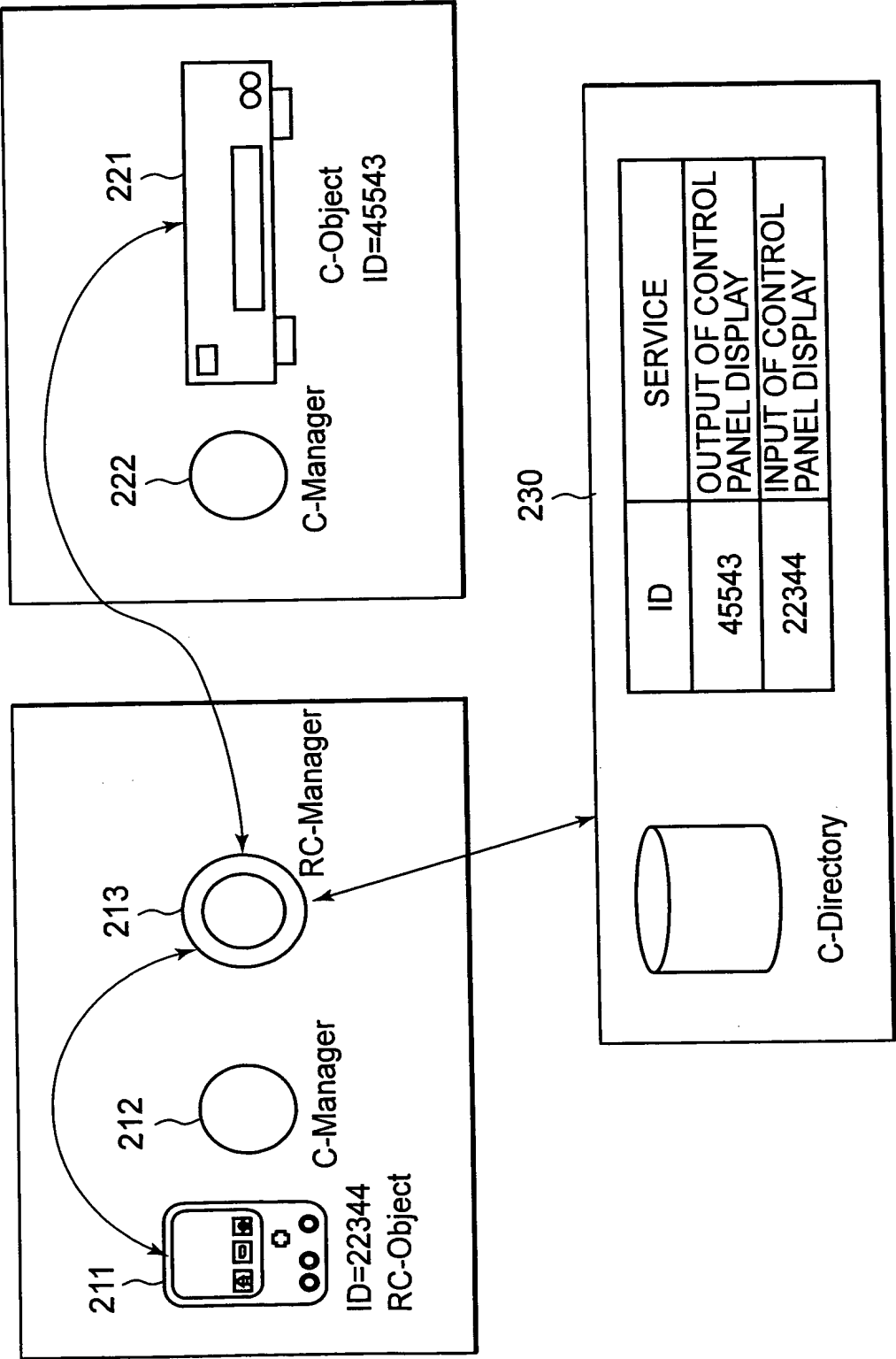
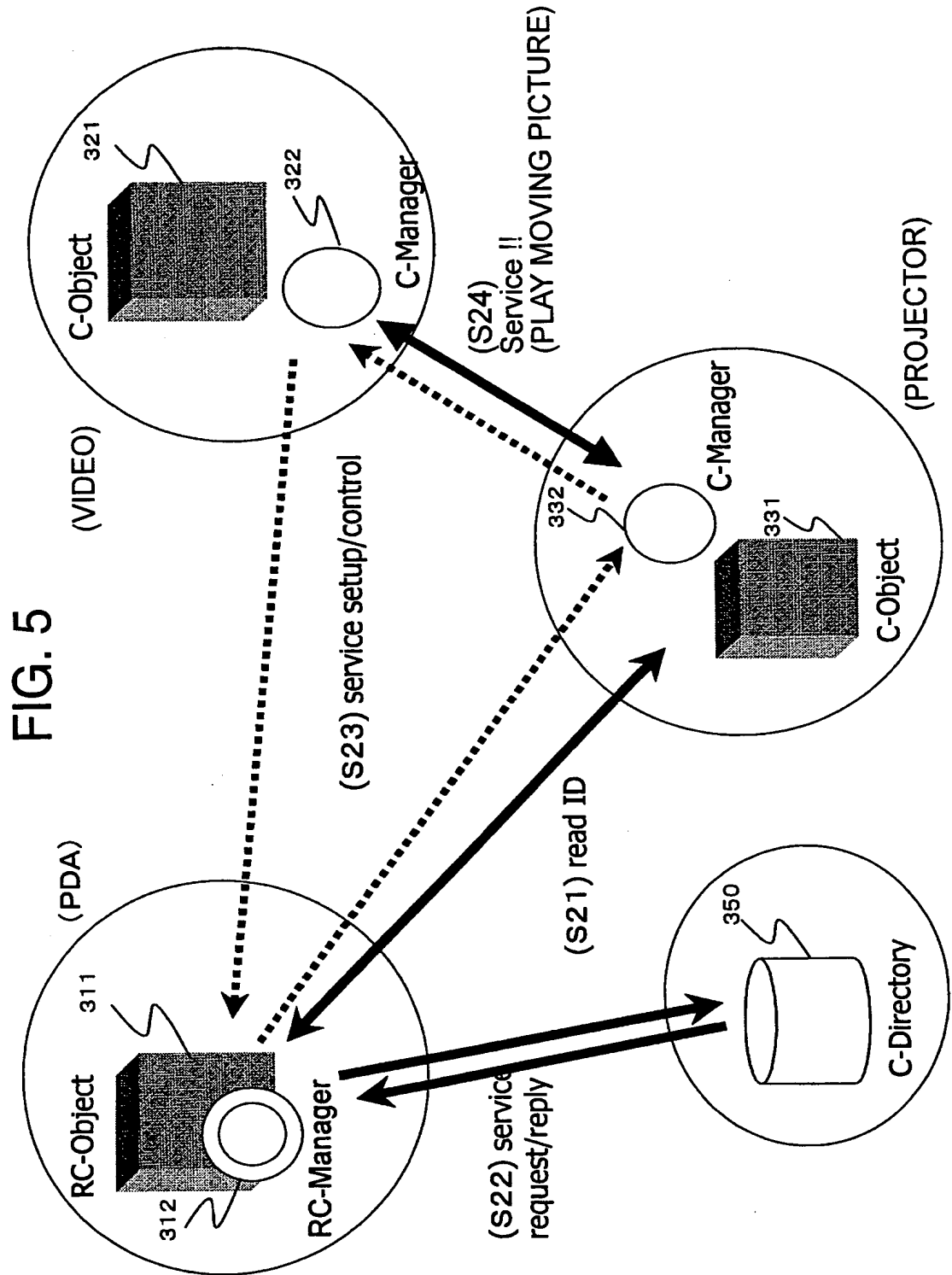


FIG. 4

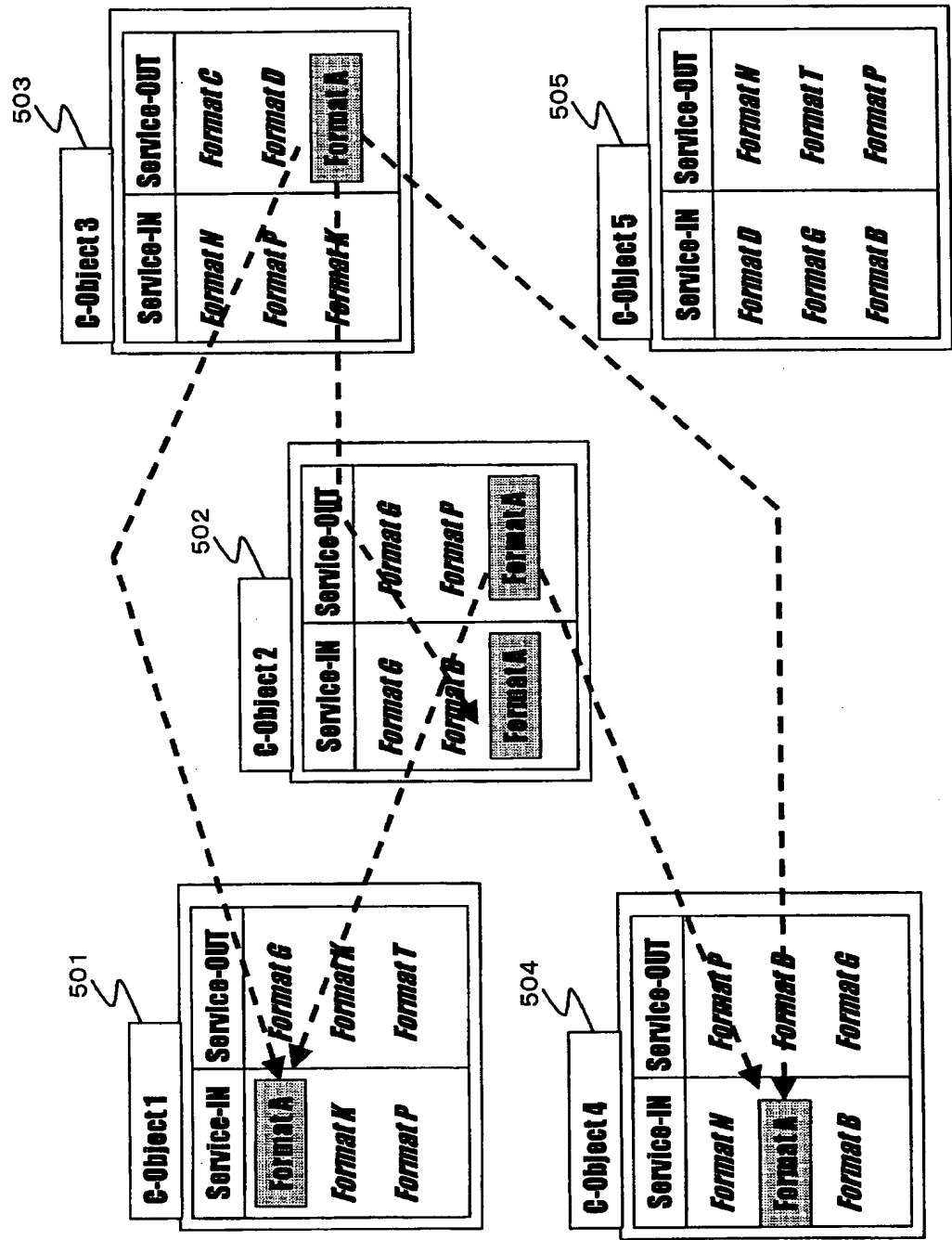


5/21



6/21

FIG. 6



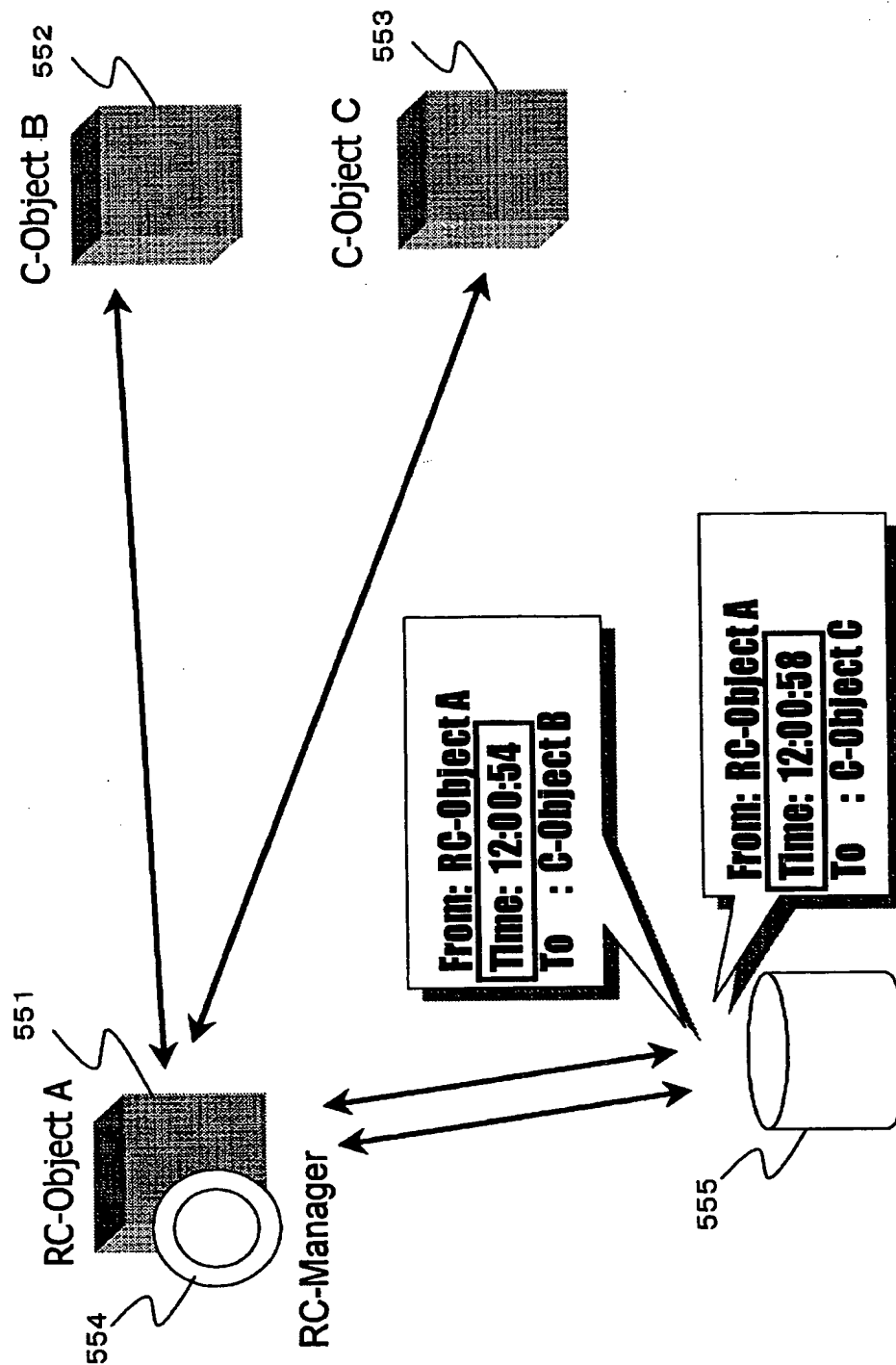
7/21

FIG. 7

TIME	RC-OBJECT'S ID	C-OBJECT'S ID
23:14:54, AUGUST 23	23444	12334
23:15:00, AUGUST 23	23444	34556
4:25:12, AUGUST 25	45667	87643
4:25:14, AUGUST 25	45667	86431
4:25:18, AUGUST 25	45667	12335
⋮	⋮	⋮

8/21

FIG. 8





9/21

FIG. 9

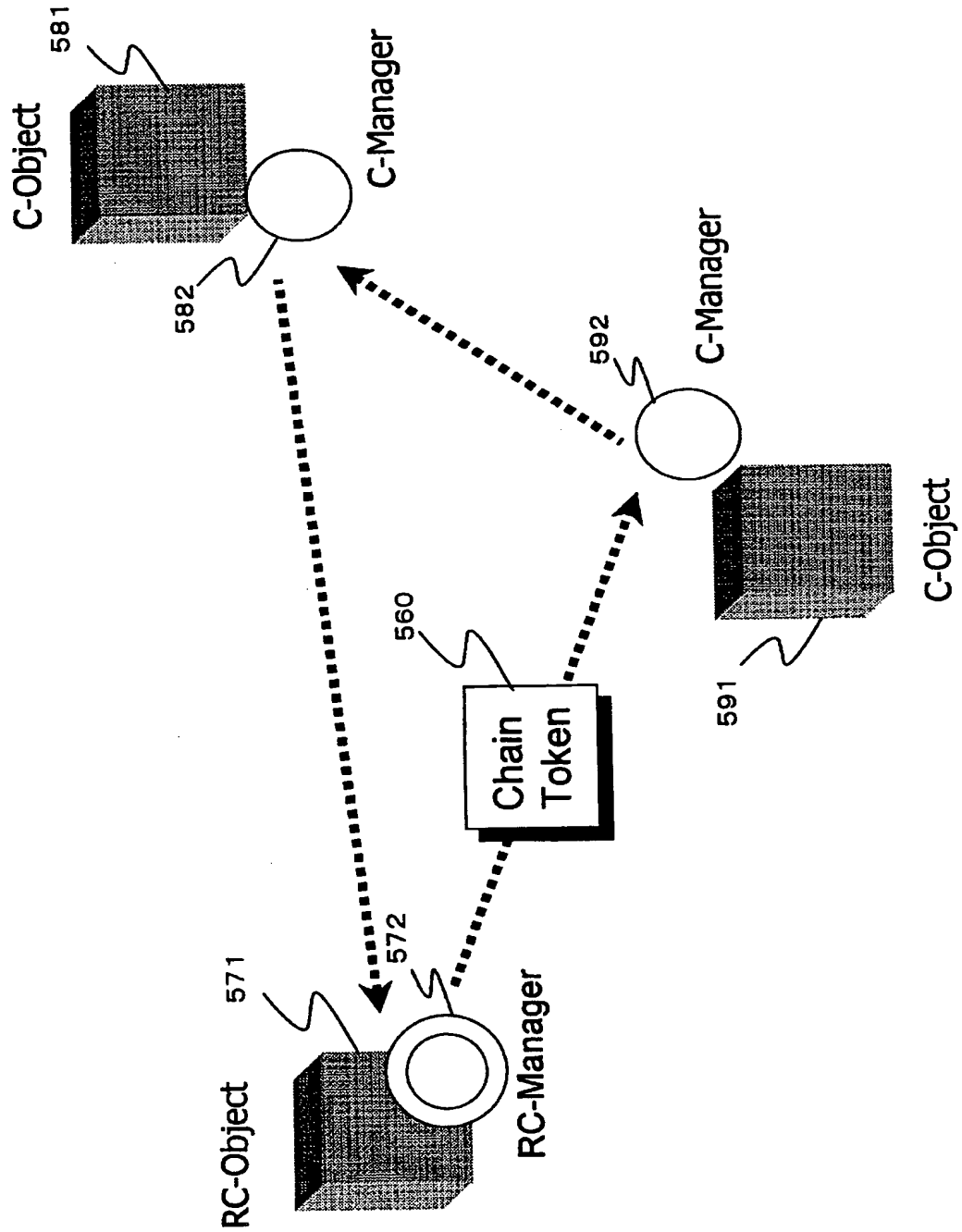
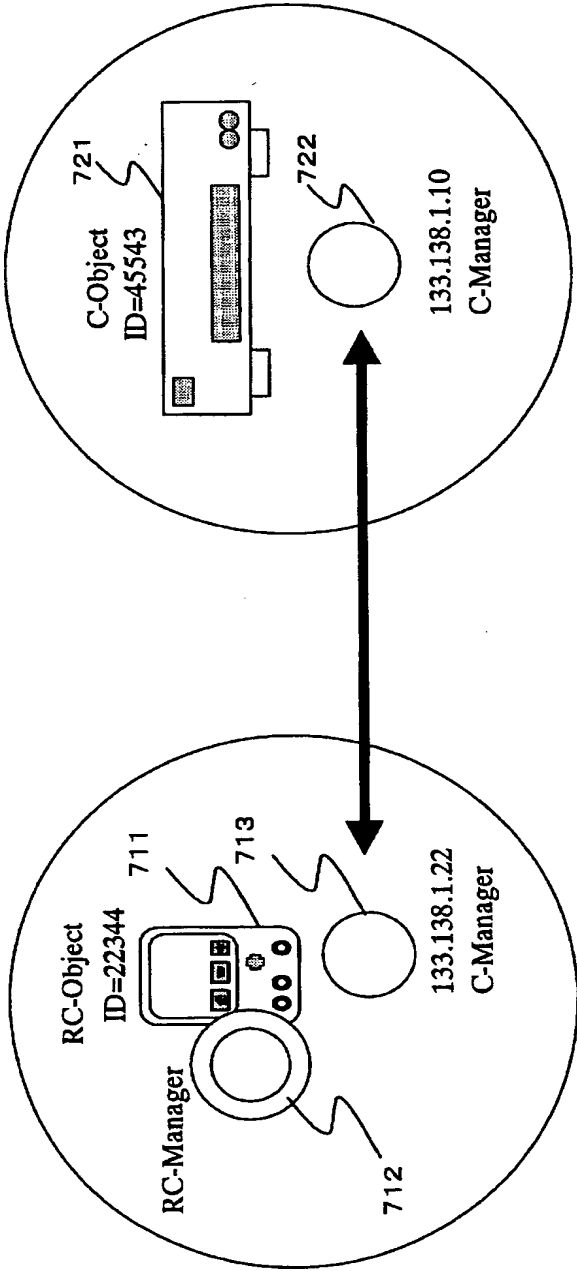


FIG. 10



C-Manager (PDA) 133.138.1.22

ID	Service	in/out	pro/re	program	attribute	value
22344	control/html	in	proactive	/usr/local/bin/netscape	url	null

C-Manager (Video) 133.138.1.10

ID	Service	in/out	pro/re	program	attribute	value
45543	control/html	out	reactive	null	url	<a href="http://133.138.1.10/control.html">http://133.138.1.10/control.html</a>

11/21

FIG. 11

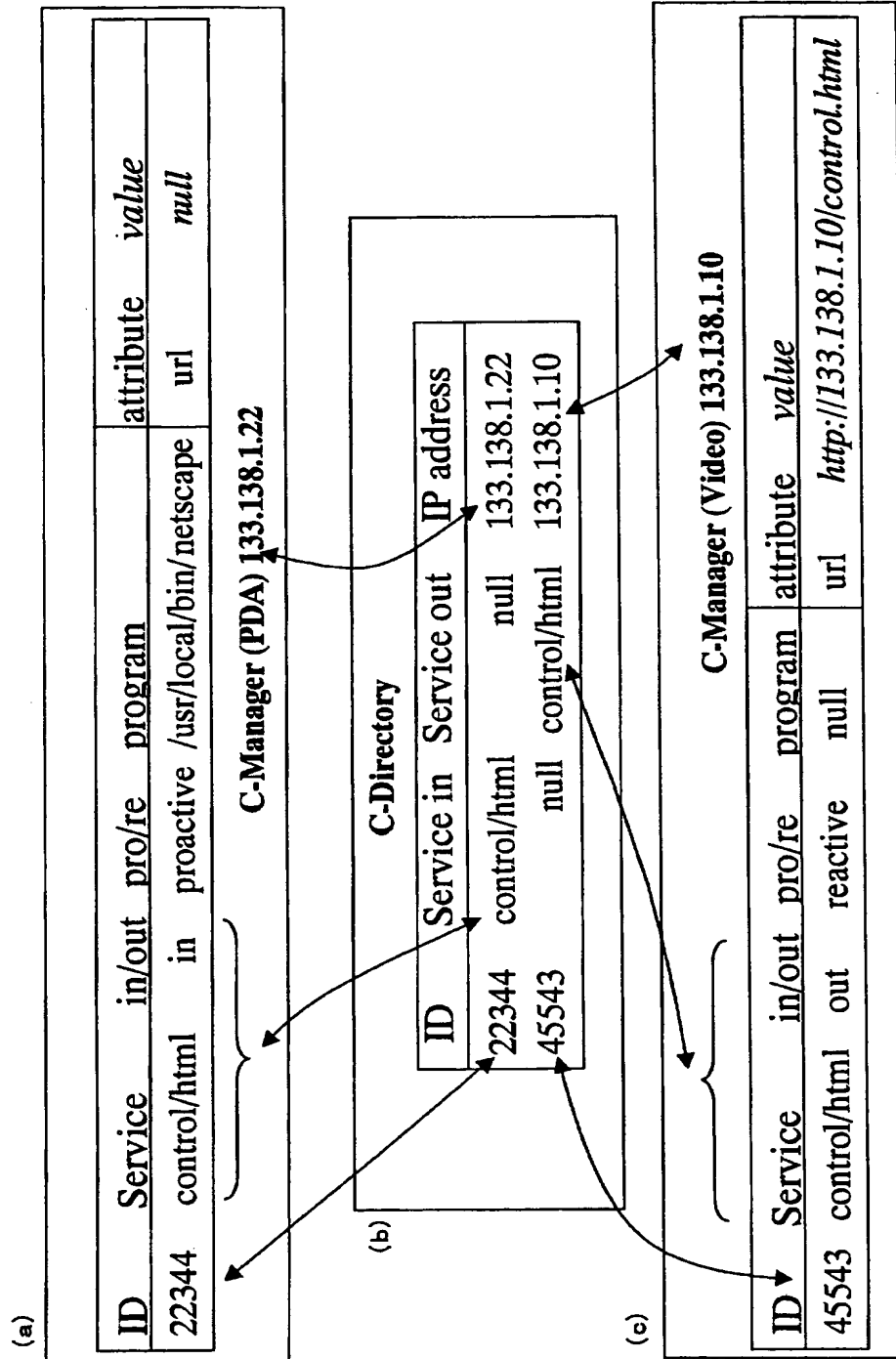
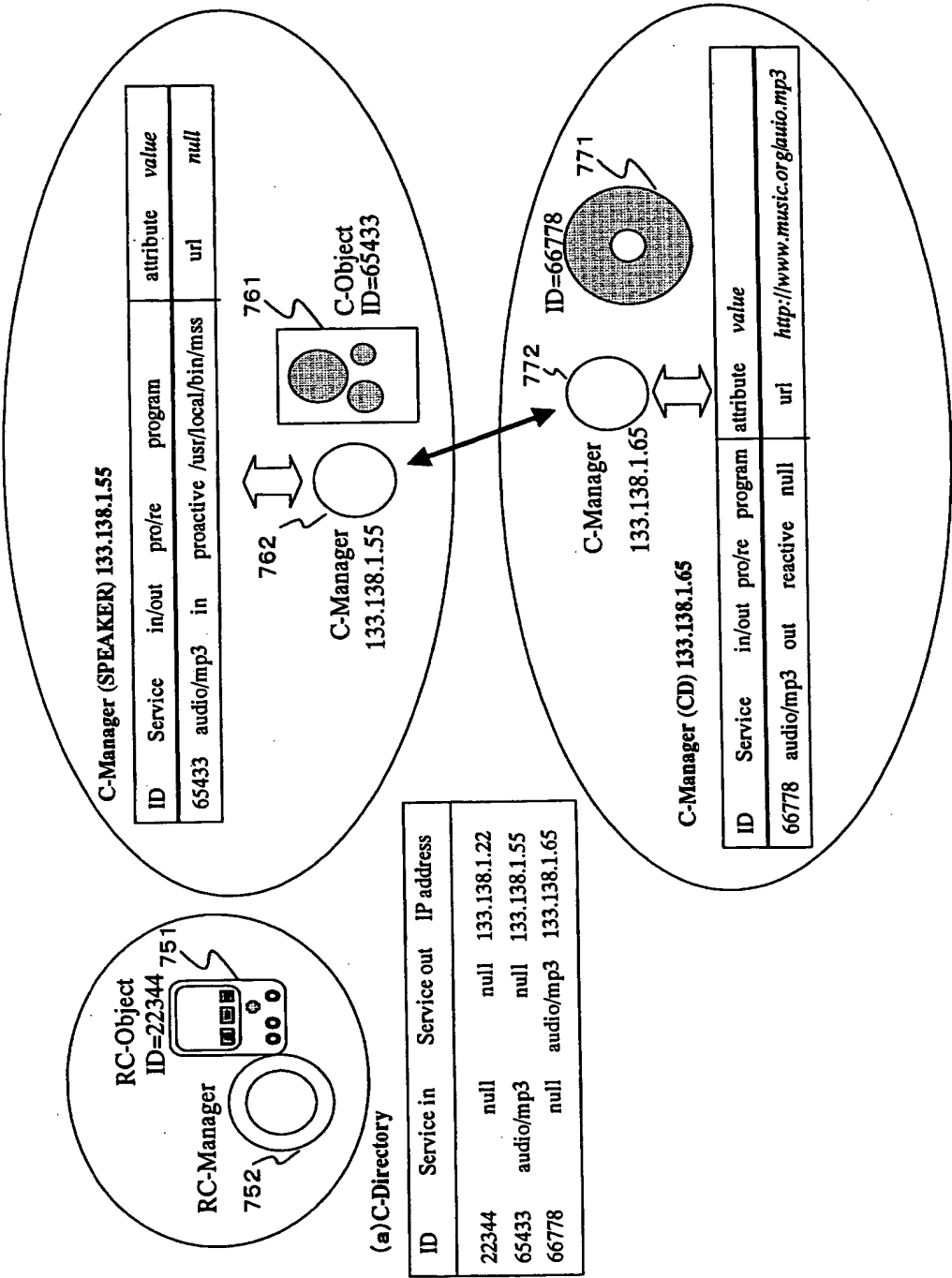


FIG. 12



13/21

## FIG. 13

<b>T-id:</b> <i>Transaction ID</i>
<b>RC-id:</b> <i>RC-Object's ID</i>
<b>C-id:</b> <i>C-Object's ID</i>

14/21

FIG. 14

<b>T-id: Transaction ID</b>	<b>801</b>
<b>Snum: # of available services</b>	
<b>Sname: service name</b>	
<b>In-id &amp; In-ip: C-Object's ID and C-Manager's IP address for a service input</b>	
<b>Out-id &amp; Out-ip: C-Object's ID and C-Manager's IP address for a service output</b>	

15/21

## FIG. 15

application/applefile	application/x-director	image/x-portable-anymap
application/atomicmail	application/x-dvi	image/x-portable-bitmap
application/batch-SMTP	application/x-futuresplash	image/x-portable-graymap
application/dves	application/x-gtar	image/x-portable-pixmap
application/eshop	application/x-gzip	image/x-rgb
application/http	application/x-hdf	image/x-rgb
application/hyperstudio	application/x-javascript	image/x-xpixmap
application/iges	application/x-koan	image/x-xwindowdump
application/index	application/x-latex	text/css
application/ipp	application/xml	text/directory
application/isup	application/zip	text/enriched
application/font-tdpfr	audio/basic	text/html
application/mac-binhex40	audio/midi	text/parityfec
application/mac-compactpro	audio/mpeg	text/plain
application/mathematica-old	audio/x-aiff	text/richtext
application/msword	audio/x-mpegurl	text/rtf
application/octet-stream	audio/x-pn-realaudio	text/sgml
application/oda	audio/x-pn-realaudio-plugin	text/xml
application/pdf	audio/x-realaudio	video/mpeg
application/postscript	audio/x-wav	video/parityfec
application/smil	image/bmp	video/pointer
application/vnd.ms-excel	image/cgm	video/quicktime
application/vnd.ms-powerpoint	image/gif	video/vnd.mpegurl
application/vnd.ms-works	image/ief	video/vnd.mts
application/vnd.wap.wmlc	image/jpeg	video/vnd.vivo
application/vnd.wap.wmlscriptc	image/png	video/x-msvideo
application/x-bcpio	image/tiff	video/x-sgi-movie
application/x-cdlink		

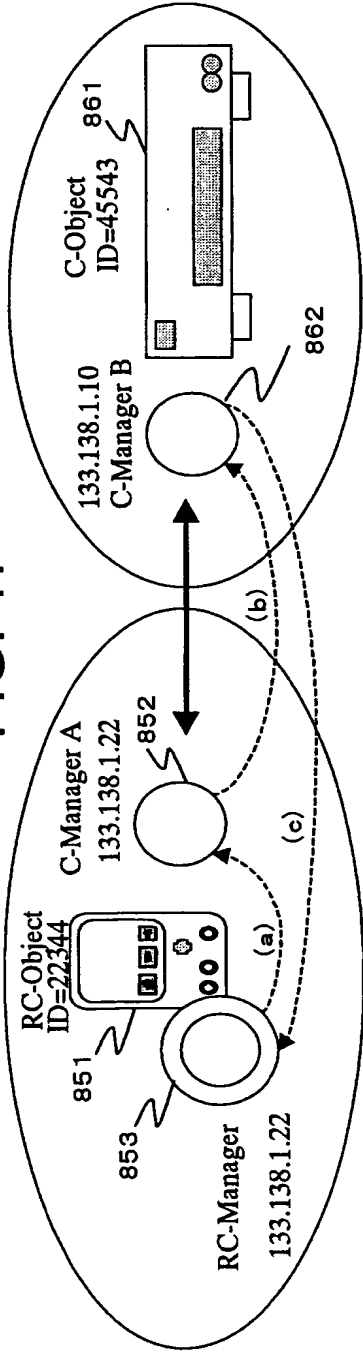
16/21

FIG. 16

<b>T-id:</b> <i>Transaction ID</i>
<b>Flag:</b> <i>Flags used to control application prog</i>
<b>Hnum:</b> <i># of hops</i>
<b>Sname:</b> <i>service name</i>
<b>In-id &amp; In-ip:</b> <i>C-Object's ID and C-Manager's IP address for a service input</i>
<b>Out-id &amp; Out-ip:</b> <i>C-Object's ID and C-Manager's IP address for a service output</i>
<b>RC-ip:</b> <i>RC-Manager's IP address</i>
<b>Reactive-ip:</b> <i>IP address of C-Manager which has a reactive application program</i>
<b>Anum:</b> <i># of attributes</i>
<b>Attribute &amp; Value:</b> <i>Attribute and value for an application program</i>



FIG. 17



TOKEN INFORMATION (FIRST ROUND)

(a) RC-Manager → C-Manager A      (b) C-Manager A → C-Manager B      (c) C-Manager B → RC-Manager

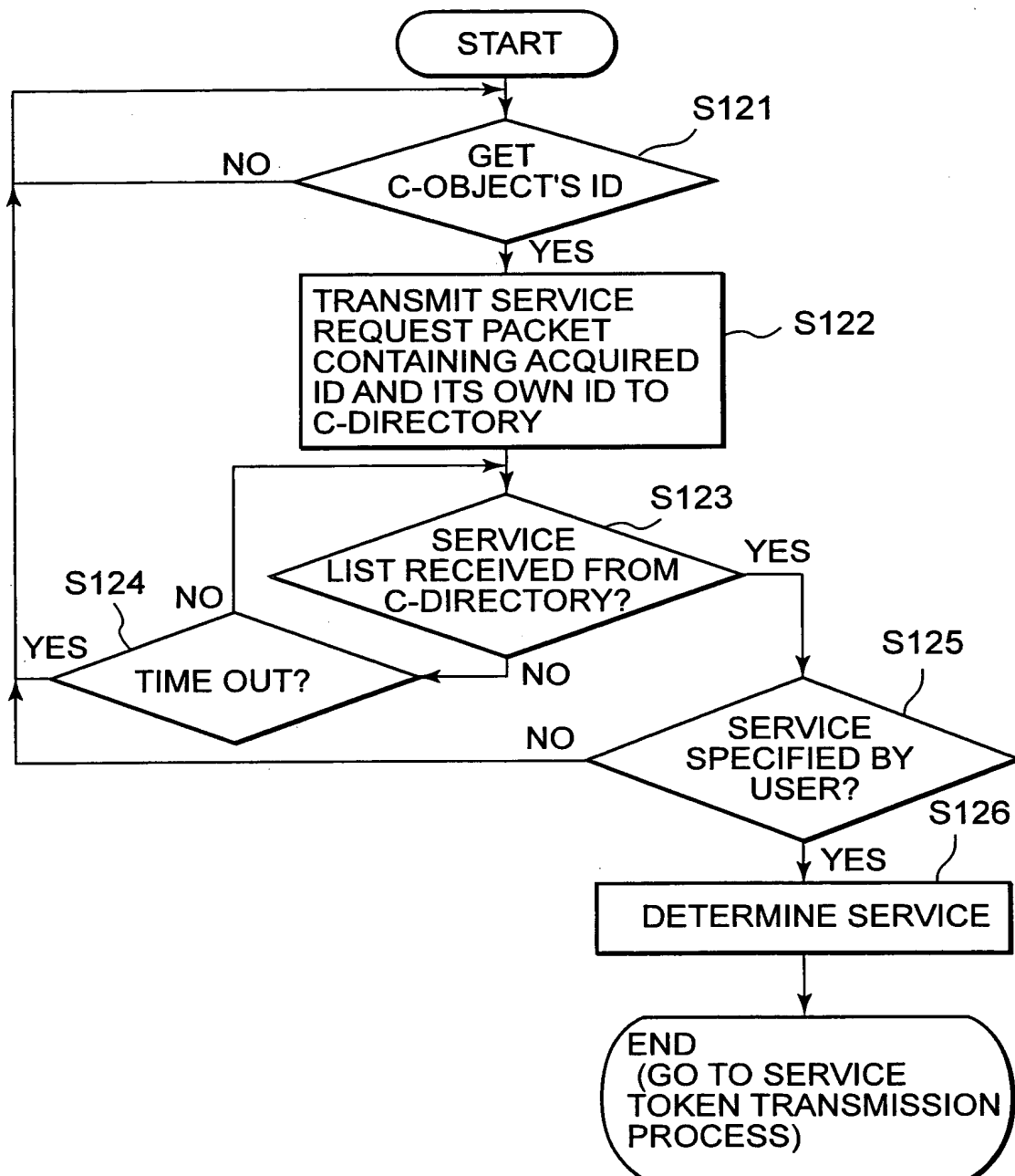
T-id: random number
Flag: 1 (exec)
Hnum: 0
Sname: control/html.
In-id: 22344
In-ip: 133.138.1.22
Out-id: 45543
Out-ip: 133.138.1.10
RC-ip: 133.138.1.22
Reactive-ip: NULL
Anum: 0

T-id: random number
Flag: 1 (exec)
Hnum: 1
Sname: control/html
In-id: 22344
In-ip: 133.138.1.22
Out-id: 45543
Out-ip: 133.138.1.10
RC-ip: 133.138.1.22
Reactive-ip: 133.138.1.22
Anum: 1
Attribute: url
Value: NULL

T-id: random number
Flag: 1 (exec)
Hnum: 2
Sname: control/html
In-id: 22344
In-ip: 133.138.1.22
Out-id: 45543
Out-ip: 133.138.1.10
RC-ip: 133.138.1.22
Reactive-ip: 133.138.1.22
Anum: 2
Attribute: url
Value: NULL
Attribute: url
Value: http://133.138.1.10/video.html

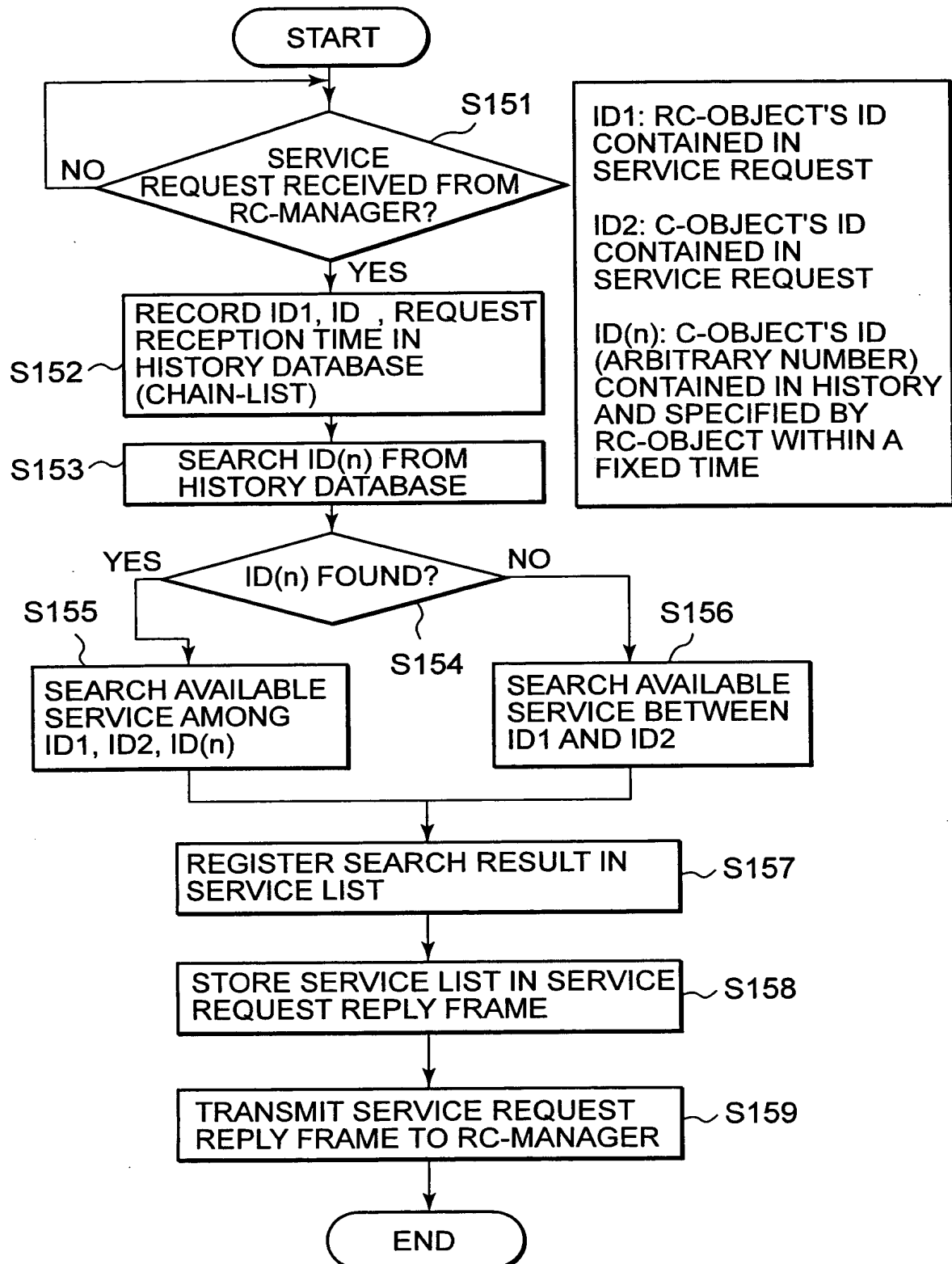
18/21

FIG. 18



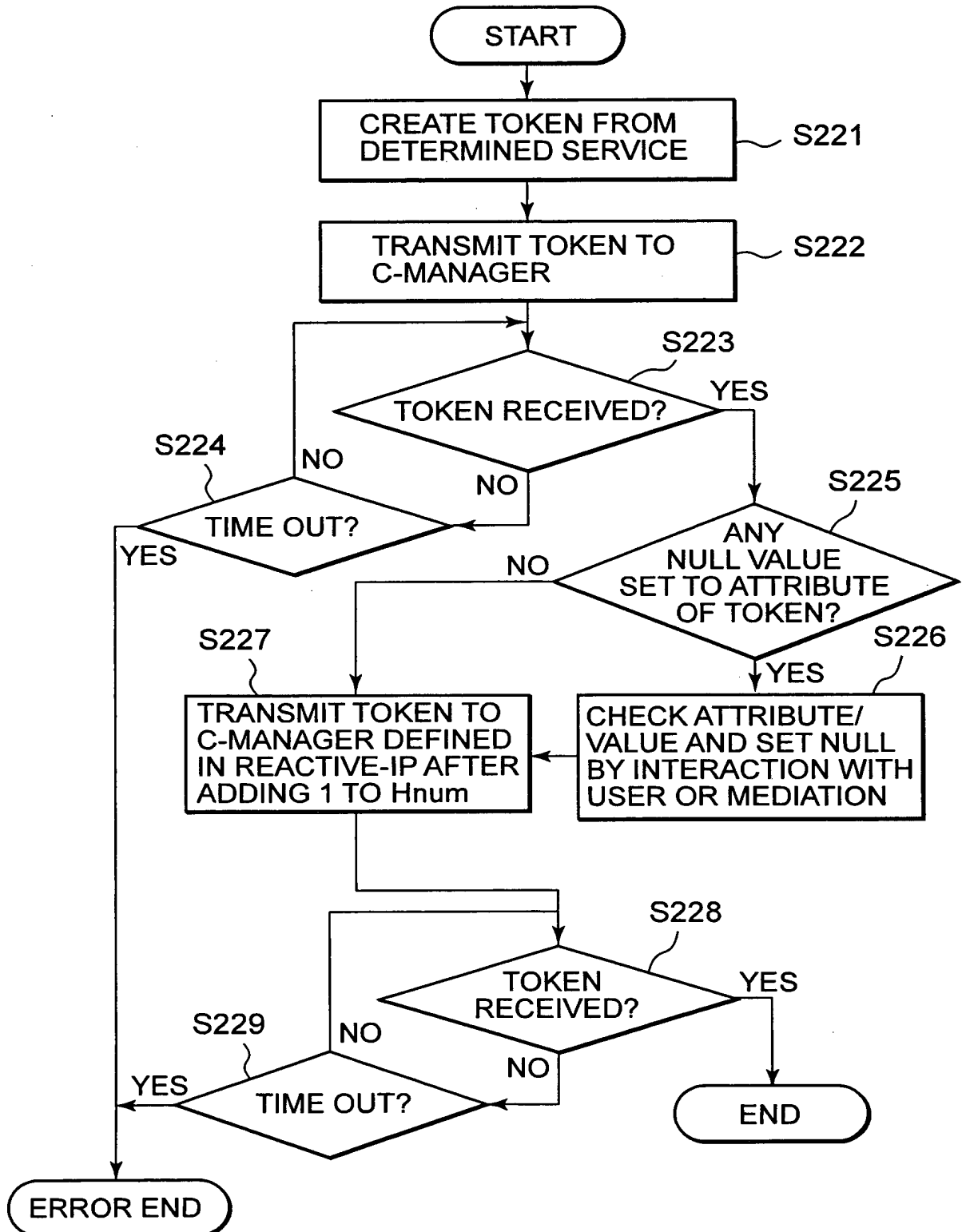
19/21

FIG. 19



20/21

FIG. 20



21/21

FIG. 21

